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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/714,524	11/17/2000	Alain Charpentier	P06983US00/RFH	5323

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EXAMINER

KEBEDE, BROOK

ART UNIT PAPER NUMBER

2823

DATE MAILED: 11/20/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

P.S.

Office Action Summary

Application No.

09/714,524

Applicant(s)

CHARPENTIER ET AL.

Examiner

Brook Kebede

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 September 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6, 8 and 9 is/are pending in the application.
- 4a) Of the above claim(s) 8 and 9 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Election/Restrictions

1. Applicants' election without traverse of Claims 1-6 in Paper No. 6 is acknowledged.
2. The non-elected claim, i.e., Claim 7, is cancelled by amendment filed on September 6, 2002.
3. Claims 8 and 9, which are directed to the invention of non-elected claim, i.e., Claim 7, are added by amendment filed on September 6, 2002.
4. Newly submitted Claims, i.e., Claims 8 and 9 are directed to an invention that is independent or distinct from the invention originally elected claims for the following reasons:
The newly added claims, i.e., claims 8 and 9 are directed to Semiconductor Device which similar to the non-elected claim, i.e., claim 7 which is cancelled by applicants.

Since applicants have received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 8 and 9 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03. Further, there is no allowable generic or linking claim.

Priority

5. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Specification

6. The specification does not have any heading and the following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicants' use.

Arrangement of the Specification

8. As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. **Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading.** If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

- (a) TITLE OF THE INVENTION.
- (b) CROSS-REFERENCE TO RELATED APPLICATIONS.
- (c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
- (d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
- (e) BACKGROUND OF THE INVENTION.
 - (1) Field of the Invention.
 - (2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
- (f) BRIEF SUMMARY OF THE INVENTION.
- (g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
- (h) DETAILED DESCRIPTION OF THE INVENTION.
- (i) CLAIM OR CLAIMS (commencing on a separate sheet).
- (j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).

Claim Objections

9. Claims 1 is objected to because of the following informalities:

Applicants uses "--" as from of indentation in Claim 1 lines 8, 13, 16 and 20 respectively.

However, such usage in the claim is confusing because it may confuse whether "--" is part of the claim or not. Applicants are advised to delete "--" in lines 8, 13, 16 and 20. Appropriate correction is required.

Claim Rejections - 35 USC § 112

10. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

11. Claims 1-6 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Although an attempt has been made to identify all instances of claim language non-compliance, such identification is extremely burdensome due to the large number of instances. Examples are provided herein below. Since such noncompliance confuses the claims to the extent that not all of the problems are readily apparent, then upon amendment, if an alternative interpretation of claim language requires a change in the rejection, the new rejection may properly **made final**.

Claims 1-6 are generally narrative and indefinite, failing to conform with current U.S. practice. They appear to be a literal translation into English from a foreign document and are replete with grammatical and idiomatic errors.

Claim 1 recites the limitation "measuring **the thickness**" in line 1. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "engraving **the substrate**" in line 5. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "tracking **the advance of the engraving front**" and "**said engraving front**" in lines 8 and 17 respectively. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "plotting **the optical emission**" in lines 9-10. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "spectrum of **the product**" in line 10. There is insufficient antecedent basis for this limitation in the claim.

Claim 1 recites the limitation "distribution of **the optical emission**" in line 13, . There is insufficient antecedent basis for this limitation in the claim.

Claim 3 recites the limitation "said spectral component of said underlying layer is the spectral line SiN at 405 nm" in lines 4-5. However, the limitation lack clarity in its scope and meaning. Therefore, the claim is indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 4 recites the limitation "wherein said correlation, on this distribution, to the transition of the optical emission amplitude is proportional to the engraving time between the optical emission amplitude at the start of the engraving, constituting a reference amplitude, and an increase of 50% of this reference amplitude on said distribution" in lines 1-7. However, the limitation lack clarity in its scope and meaning. Therefore, the claim is indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 2-6 are also rejected as being dependent of the rejected independent base claim.

12. Applicants' cooperation is requested in reviewing the claims structure to ensure proper claim construction and to correct any subsequently discovered instances of claim language noncompliance. See *Morton International Inc.*, 28USPQ2d 1190, 1195 (CAFC, 1993).

In light of the rejection 35 U.S.C. § 112 second Paragraph that set forth herein above, the following 35 U.S.C. 102 rejection is based on prior art which reads on the

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interpretation the claim language of the instant application as best as understood by the Examiner.

Claim Rejections - 35 USC § 102

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

14. Claims 1-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Sawin et al. (US/5,450,205).

Re claims 1, 3, 4 and 6 Sawin et al. disclose a method a real time measurement of thin film layer thickness if integrated circuit a method includes the measured layer being deposited on an underlying layer and etching of the thin film (i.e., engraving) during the process and monitoring or recoding modulation of the plasma emission (i.e., tracking the advance of the engraving front of each integrated circuit layer by plotting the optical emission spectrum) (see Abstract); establishing distribution of the optical emission amplitude of the etching (i.e., engraving) reaction product as a function of time (see Fig. 5) determining the distribution, the transition of the optical emission amplitude as the etching (engraving) from the thin film layer to the underlying layer (see Figs. 6A and 6B); computing the thickness of said layer to be measured, on the basis of said distribution and said transition, by correlating said transition to said distribution. (see Figs. 9 and 13) (also see Col. 1, line 14 – Col. 2, line 67; Col. 21, line 53-67; Col. 22, line 57).

Re claim 2, as applied to claim 1 above, Swain et al. disclose all the claimed limitations including the limitation wherein the spectral component of said underlying layer is a perceptible emission wavelength characteristic of said underlying layer (see Figs. 9 and 13) (also see Col. 1, line 14 – Col. 2, line 67; Col. 21, line 53-67; Col. 22, line 57).

Re claim 5, as applied to claim 1 above, Swain et al. disclose all the claimed limitations wherein said thickness of said layer to be measured is computed on the basis of a linear combination linking said engraving time and the calculated thickness of the layer to be measured (see Figs. 9 and 13) (also see Col. 1, line 14 – Col. 2, line 67; Col. 21, line 53-67; Col. 22, line 57).

Conclusion

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure Wolf et al., Silicon Processing for the VLSI era, Volume I, pp. 234-238, (1986), Schoenborn (US/5,362,356), Morrison et al. (US/5,403,433), Coronel et al. (US/5,807,761), Iturralde (5,955,139), and Grimbergen et al. (US/6,081,334) also disclose similar inventive subject matter.

Correspondence

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brook Kebede whose telephone number is (703) 306-4511. The examiner can normally be reached on 8-5 Monday to Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on (703) 306-2794. The fax phone numbers for the

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organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Brook Kebede

November 15, 2002


Olik Chaudhury
Supervisory Patent Examiner
Technology Center 2800